AIWA®

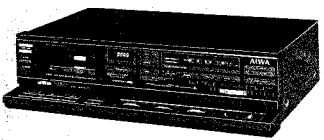
S/M Code No. 85-024
DATE OF ISSUE 5/1985

SERVICE MANUAL

STEREO CASSETTE DECK

MODEL NO.

AD-F640, S40



TYPE. HB,EB,KB,GB,ZB UB(AD-S40)

Type	Stereo cassette deck
Track format	4 tracks 2 channels
Power supply	**AD-F640E, Z** AC 220 V 50 Hz **AD-F640K, G** AC 240 V 50 Hz **AD-S40 U** AC 120 V 60 Hz **AD-F640H** AC 120 V/220 V/240 V switchable, 50/60 Hz
Power consumption	20 W
Frequency response	METAL tape: 20—18,000 Hz CrO_2 position tape: 20—17,000 Hz NORMAL tape: 20—16,000 Hz
Signal-to-noise ratio	75 dB (METAL tape DOLBY C NR ON)
Wow and flutter	According to DIN 45 500 0.09% 0.028% (WRMS)
Tape speed	4.8 cm/sec. (1-7/8 ips)
Rewind time	60 sec. (C-60)
Fast forward time	60 sec. (C-60)
Recording system	AC bias (frequency 85 kHz)
Erase system	AC erase
Motor	DC Servomotor for capstan DC motor for reels
Head	Recording, playback head: DX combination head Erase head: Double gap ferrite head

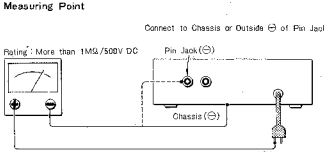
Inputs	LINE IN maximum input sensitivity: 50 mV (over 50 k-ohms)
Outputs	LINE OUT standard output level: 0.41 V (0 VU); Suitable load impedance: over 50 k-ohms; Headphones: 8 ohms
Dimensions	420(W) ×110(H) ×299.5(D) mm [16-5/8″(W) ×4-3/8″(H) × 11-7/8″(D)]
Weight	4.7 kg (10.3 lbs.)
Accessories	Stereo pin cord..... 2

- Design and specifications are subject to change without notice.
- Noise Reduction manufactured under license from Dolby Laboratories Licensing Corporation.
- HX PRO headroom extension originated by Bang & Olufsen and manufactured under license from Dolby Laboratories Licensing Corporation.
- "Dolby," the double-D symbol, and "HX PRO" are trademarks of Dolby Laboratories Licensing Corporation.

Follow the instructions carefully, which will allow the user to optimise the products' performance and give many years of serivce.

1. **No scratch and melting shall be made to covered lead-wires of an a.c. primary circuit including mains leads.**
2. **No illegibility shall be given to the specification plate, the caution labels, the fuse labels and others.**
3. **When, on pattern sides of circuit boards, additional repair-parts have been made up, the parts shall be firmly glued to circuit boards or other components, unless the parts can be attached firmly.**
4. **The following matters shall be maintained as they are, when repairing.**
   1) Soldering of lead-wire ends
      * Care should be taken of the space distance in an a.c. primary circuit as well as soldering.
   2) Wiring and holding of lead-wires with wire-clips and binders
   3) Materials of lead-wires
      * e.g.; For UL models, lead-wires to be used shall be approved or accepted by the UL.
   4) Location of all kinds of insulators
   5) Setting of voltage selector switch
      * Set the Voltage Selector Switch to 240V, 220V, or 120V, According to your Local Voltage.
5. **After repaired, the insulation resistance or leakage current shall be measured with 500 ± 5V D.C and shall be not less than 1MΩ.**

Measuring Point



6. **General instructions for mechanism repair**
   1) The heads, capstan and pinch roller shall be cleaned of good quality alcohol after repaired, because dirty heads shall cause distorted sounds while dirty capstan and pinch roller shall occur wow/flutter and take-up fault.
   2) Lubricants been stained the surfaces of transmitting portion of the belts, idlers, capstan and pinch roller shall be removed, because slippery and faulty tape travel shall be caused.
   3) When oiling, only one or two drops shall be applied so as not to run over and be dispersed. Note should be taken of the metal fitting for the capstan and rotating portions of the idlers and pinch roller, especially.
   4) E-rings and poly slider washers shall be replaced with new ones, if once those have been removed. — No re-utilization due to unreliability.
   5) Regular spare-parts shall always be used for repair, because using irregular parts and tampering with the products shall cause deterioration, mulfunction and damage.

ELECTRICAL MAIN PARTS LIST

- +++ mark denotes a component of assembled part which part code is represented by a previously stated component.
- *-mark means less required items and availabilities may be limited.

CAPACITORS No mark, U, UF: μF P, PF : pF

COILS MMH: mH UH : μH

FUSE MMA:mA

Ref. No.	Part No.	Description
		=== IC ===
	87-020-503	IC,AN78M07
	87-020-504	IC,AN79M07
	87-020-180	IC,BA6146
	87-020-372	IC,L78N05
Ⓢ	82-100-630	IC,LC6502B-724
	87-027-895	IC,M5218L
	87-027-925	IC,M5220
	87-027-909	IC,M54523P
	87-020-052	IC,NJM4556S
	87-027-986	IC,NJM4560S
Ⓢ	87-027-937	IC,TC4030BP
Ⓢ	87-027-656	IC,TC4066BP
		=== TRANSISTOR ===
	89-108-854	TRANSISTOR,2SA885R,S
	89-109-521	TRANSISTOR,2SA952K
	89-110-155	TRANSISTOR,2SA1015,GR
	89-318-155	TRANSISTOR,2SC1815GR,BL
	89-320-011	TRANSISTOR,2SC2001K
	89-321-204	TRANSISTOR,2SC2120Y
	89-412-753	TRANSISTOR,2SD1275
		=== MAIN CIRCUIT BOARD SECTION ===
PCB-A	*	MAIN CIRCUIT BOARD
C51	* 87-018-044	CAP,CERA-SOL S 1000P
C101	* 87-018-033	CAP,CERA-SOL S 120P
C102	* 87-018-033	CAP,CERA-SOL S 120P
C103	* 87-018-040	CAP,CERA-SOL S 470P
C104	* 87-018-040	CAP,CERA-SOL S 470P
C109	* 87-010-132	CAP,ELECT BP 1-50
C110	* 87-010-132	CAP,ELECT BP 1-50
C201	* 87-018-034	CAP,CERA-SOL S 150P
C202	* 87-018-034	CAP,CERA-SOL S 150P
C309	* 87-018-034	CAP,CERA-SOL S 150P
C310	* 87-018-034	CAP,CERA-SOL S 150P
C505	* 87-018-044	CAP,CERA-SOL S 1000P
C506	* 87-018-044	CAP,CERA-SOL S 1000P
C705	* 87-010-139	CAP,ELECT BP 22-25
C713	* 87-014-159	CAP,PP 0.012G-100V
C809	* 87-010-231	CAP,ELECT 220-10 KS
C810	* 87-010-231	CAP,ELECT 220-10 KS
D51	* 87-020-110	DIODE 1SS177
D52	* 87-020-110	DIODE 1SS177
D701	* 87-020-110	DIODE 1SS177
D702	* 87-020-110	DIODE 1SS177
D801	87-027-815	DIODE 1B4B1 LC-2
D802	* 87-020-110	DIODE 1SS177
D803	* 87-020-110	DIODE 1SS177
D804	* 87-020-110	DIODE 1SS177
D805	87-027-702	DIODE,ZENER HZ6C2L
J1	87-049-055	JACK,4P (LINE IN)
J2	+++	JACK,4P (LINE IN)
J3	+++	JACK,4P (LINE OUT)
J4	+++	JACK,4P (LINE OUT)
J501	87-049-394	6.3 JACK (PHONES)
L101	* 82-190-629	FILTER LP,85K-2
L102	* 82-190-629	FILTER LP,85K-2
L301	* 82-135-632	FILTER MPX 85K
L302	* 82-135-632	FILTER MPX 85K
L401	* 82-132-631	COIL 4.7MMH,J
L402	* 82-132-631	COIL 4.7MMH,J
L403	* 82-135-631	FILTER TRAP 85K
L404	* 82-135-631	FILTER TRAP 85K

Ref.No.	Part No.	Descripton
L511	* 82-196-649	COIL OSC LC6502C
L701	* 82-132-644	COIL ,OSC EH-85K
L702	* 87-003-051	COIL,CHOKE 470MMH
L703	* 87-003-051	COIL,CHOKE 470MMH
⚠R705	87-029-069	RES,FUSIBLE ,1/4W4.7
⚠R801	87-029-019	RES,FUSIBLE ,1/2W-2.2
S1	82-100-631	PUSH SW-SUL 2-2-2 (MPX)
S2	82-100-632	PUSH SW-SUL 2-4-2 (MONITOR)
S6	87-031-752	SLIDE SW (CrO₂/CO SELECTOR) (Z ONLY)
SFR101	* 87-021-734	SFR 100
SFR102	* 87-021-734	SFR 100
SFR103	* 87-021-743	SFR 22K
SFR104	* 87-021-743	SFR 22K
SFR401	* 87-021-744	SFR 33K
SFR402	* 87-021-744	SFR 33K
SFR601	* 87-021-743	SFR 22K
SFR602	* 87-021-743	SFR 22K
SOL701	* 87-031-751	SW SOLENOID
		=== FRONT CIRCUIT BOARD SECTION ===
PCB-B	*	FRONT CIRCUIT BOARD
C301	* 87-015-695	CAP,ELECT 1-50
C302	* 87-015-695	CAP,ELECT 1-50
C303	* 87-015-684	CAP,ELECT,47-16V
C307	* 87-015-682	CAP,ELECT 22-16
C308	* 87-015-682	CAP,ELECT 22-16
D601	87-027-301	DIODE,ZENER HZ 3A1
D618	* 87-027-543	LED,LN317GP (B-TYPE)
D619	* 87-027-542	LED,LN217RP (C-TYPE)
D620	* 87-027-543	LED,LN317GP (TAPE)
D621	* 87-027-671	LED,LN417YP (SOURCE)
D622	* 87-027-542	LED,LN217RP (ADMS)
D628	87-020-110	DIODE 1SS177
D629	87-020-110	DIODE 1SS177
D630	87-020-110	DIODE 1SS177
D631	* 87-027-543	LED,LN317GP (NORMAL)
D632	* 87-027-671	LED,LN417YP (CrO₂)
D633	* 87-027-542	LED,LN217RP (METAL)
FL601	* 82-197-631	FL 9-ST-10AK (TAPE COUNTER)
FL602	* 82-199-635	FL 8G-2322K 1200T (PEAK PROGRAM METER)
R609	* 87-025-154	RES,MF ,1W-270
S601	87-031-930	TACT SW,KHH15912 (COUNTER RESET)
VR301	82-100-633	SLIDE VR,100KA (REC LEVEL)
		=== VOLUME CIRCUIT BOARD SECTION ===
PCB-C	*	VOLUME CIRCUIT BOARD
S3	87-031-807	SLIDE SW 2-2-3 (DOLBY B-C NR)
VR302	82-199-632	VR,250KW-BAL (REC BALANCE)
VR601	82-197-632	VR 50KB CC (BIAS FINE)
		=== KEY CIRCUIT BOARD SECTION ===
PCB-D	*	KEY CIRCUIT BOARD
D41	* 87-027-731	LED SR-535D (RECORD)
D42	* 87-027-731	LED SR-535D (REC MUTE)
D44	* 87-027-732	LED SG-235D (PLAY)
D43	* 87-027-733	LED SY-435 (PAUSE)
S41	87-031-771	TACT SW EVQ-QSK04M (REW/REVIEW)
S42	87-031-771	TACT SW EVQ-QSK04M (PLAY)
S43	87-031-771	TACT SW EVQ-QSK04M (STOP)
S44	87-031-771	TACT SW EVQ-QSK04M (F.FWD/CUE)
S45	87-031-771	TACT SW EVQ-QSK04M (PAUSE)
S46	87-031-771	TACT SW EVQ-QSK04M (RECORD)
S47	87-031-771	TACT SW EVQ-QSK04M (REC MUTE)

Ref. No.	Part No.	Description
S48	87-031-807	SLIDE SW 2-2-3 (TIMER)
S49	87-031-807	SLIDE SW 2-2-3 (COUNTER)
		=== HX CIRCUIT BOARD SECTION ===
PCB-E	82-132-620	HX CIRCUIT BOARD
C1	* 87-014-041	CAP,PP 220P
C2	* 87-014-041	CAP,PP 220P
C3	* 87-014-131	CAP,PP 0.0018
C4	* 87-014-131	CAP,PP 0.0018
D1	87-020-156	DIODE MC931
D2	87-020-156	DIODE MC931
L1	* 82-132-643	COIL,OSC 85K-HX
L2	* 82-132-643	COIL,OSC 85K-HX
⚠R5	87-029-082	RES,FUSIBLE,1/4W-100
⚠R6	87-029-082	RES,FUSIBLE,1/4W-100
SFR1	* 87-021-869	SFR 220K
SFR2	* 87-021-869	SFR 220K
		=== HP CIRCUIT BOARD SECTION ===
PCB-F	*	HP CIRCUIT BOARD
		=== POWER SW CIRCUIT BOARD SECTION ===
PCB-G	*	POWER SW CIRCUIT BOARD
C801	* 87-019-113	SPARK KILLER,0.0022E
S7	87-031-753	PUSH SW SDL D (POWER)
		=== AUTO STOP CIRCUIT BOARD SECTION ===
PCB-H	81-505-605	AUTO STOP CIRCUIT BOARD
PS51	* 87-027-644	PHOTO SENSOR NJL-5141EA
		=== DOLBY UNIT CIRCUIT BOARD SECTION ===
PCB-I	* 87-020-133	DOLBY UNIT HA12058-3H
		=== DOLBY UNIT CIRCUIT BOARD SECTION ===
PCB-J	* 87-020-133	DOLBY UNIT HA12058-3H
		=== MISCELLANEOUS ===
⚠	* 87-034-958	AC CORD (H) (H ONLY)
⚠	* 87-034-951	AC CORD,UC (U ONLY)
⚠	87-034-877	AC CORD E (E,Z ONLY)
⚠	87-034-975	AC CORD K (K ONLY)
⚠	87-034-892	AC CORD G (G ONLY)
EH	* 87-046-753	ERASE HEAD
LED1	* 87-027-944	LED,SLF301C (CASSETTE)
M51	87-045-135	MOTOR DC EG
M52	81-505-604	REEL MOTOR
⚠PT	82-199-622	TRANSFORMER,PT H (H ONLY)
⚠PT	82-199-623	TRANSFORMER,PT UC (U ONLY)
⚠PT	82-199-624	TRANSFORMER,PT E (E,Z ONLY)
⚠PT	82-199-625	TRANSFORMER,PT K,G (K,G ONLY)
RPH	87-046-194	REC/PB HEAD
⚠S8	87-031-566	ROTARY SW (AC VOLTAGE) (H ONLY)
S51	81-505-607	LEAF SW(AU) BSW187-2 (CrO₂)
S52	81-505-607	LEAF SW(AU) BSW187-2 (METAL)
S53	81-505-607	LEAF SW(AU) BSW187-2 (CASSETTE)
S54	81-505-607	LEAF SW(AU) BSW187-2 (REC EN)
S55	81-505-601	LEAF SW (PLAY)
S56	81-505-601	LEAF SW (PAUSE)
SOL51	* 81-507-237	SOLENOID 9ME-C (PLAY)
SOL52	* 81-507-237	SOLENOID 9ME-C (PAUSE)

Note; Combination Circuit Board

The parts on the electrical parts list which are indicated by an asterisk (*) are supplied as one single combined circuit board. Therefore, they will not be supplied separately. If this becomes necessary,please order the entire circuit board.

Combination circuit board A 82-100-601
PCB-A 82-100-602
PCB-F 82-100-603

Combination circuit board B 82-100-611
PCB-B 82-100-612
PCB-C 82-100-613
PCB-D 82-100-614
PCB-G 82-100-615

C-MOS IC handling precaution

The C-MOS IC's construction makes this part susceptible to damage by static electricity and so take sufficient care in regard to following articles.

1. Need to be put on conductive sheet, to be put in a metallic box and to be wrapped by aluminium foil for transportation and deposit.
2. To use solder iron less than 40W (less than 260℃) of power consumption for soldering. But do not overheat more than 10 second.
3. Do not perform a conductivity test with a tester, etc. Refer to the circuit voltages of each part.
4. The ICs on the electrical parts which are indicated by an C-MOS IC symbol mark (Ⓢ).

⚠ Safety component symbol

This symbol is given to important parts which serve to maintain the safety of the product, and which are made to conform to special safety specifications. Therefore, when replacing a component with this symbol, make absolutely sure that you use a designated part.

ADJUSTMENT

oard
s list which are indicated by an
single combined circuit board.
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circuit board.

82-100-601

82-100-611

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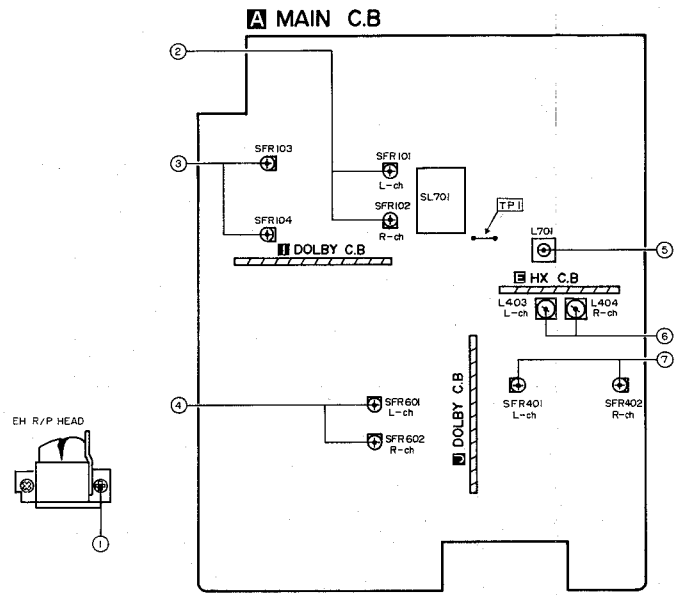


Practical Service Figure

Pinch roller pressure:	F side 350±30g(3.43±0.29N)
	T side 165±15g(1.62±0.15N)
Take-up torque:	38±10g-cm (0.37±0.098mN·m)
FF & REW torque:	150 $^{+40}_{-30}$ g-cm (1.47 $^{+0.39}_{-0.29}$ mN·m)
Counter indication error:	0±3 digit (C-60)
PB output: (TTA-161)	560±68mV (LINE)
REC/PB output:	LINE 380±30mV (NORMAL)
REC/PB distortion:	Less than 1.5% (NORMAL)
Playback noise: (Unweighted)	Less than 4.0/2.0/1.7mV (NORMAL DOLBY-NR OFF/B/C)
(WTD)	Less than 1.5/0.7mV (NORMAL DOLBY-NR OFF/B, C)
REC/PB SN ratio: (Unweighted)	More than 42/45/48dB (NORMAL DOLBY-NR OFF/B/C)
Erasing ratio: (125Hz)	More than 80dB
Bias frequency:	85kHz
Test tape:	METAL TTA-119MP
	NORMAL TTA-119J
	CrO_2 TTA-119G

1. Azimuth Adjustment
   - Test tape: TTA-317E

2. PB Frequency Response Adjustment
Settings:
- Test tape: TTA-317E
- Test point: LINE OUT
- DOLBY NR switch: OFF
- Adjustment locations: SFR101 (L-ch)
  SFR102 (R-ch)

Method: Play back the test tape, then adjust so that the output difference between 1kHz and 10kHz is 0 $^{+0.5}_{-0}$ dB.

3. PB Sensitivity Adjustment
Settings:
- Test tape: TTA-161
- Test point: LINE OUT
- DOLBY NR switch: OFF
- Adjustment locations: SFR103 (L-ch)
  SFR104 (R-ch)

Method: Adjust so that output is 560mV.

4. FL Level Meter Adjustment
Settings:
- Recording mode
- MONITOR switch: SOURCE
- Input signal: 1kHz, 380mV
- Test point: LINE OUT
- Adjustment locations: SFR601 (L-ch)
  SFR602 (R-ch)

Method: Adjust RECORD VOLUME so that the output is 380mV. Adjust SFR601, 602 so that 0dB LED light up.

5. Bias OSC Frequency Adjustment
Settings:
- Test tape: TTA-119MP
- Test point: TP1
- Adjustment location: L701

Method: Adjust so that the OSC frequency is 85kHz ±0.1kHz.

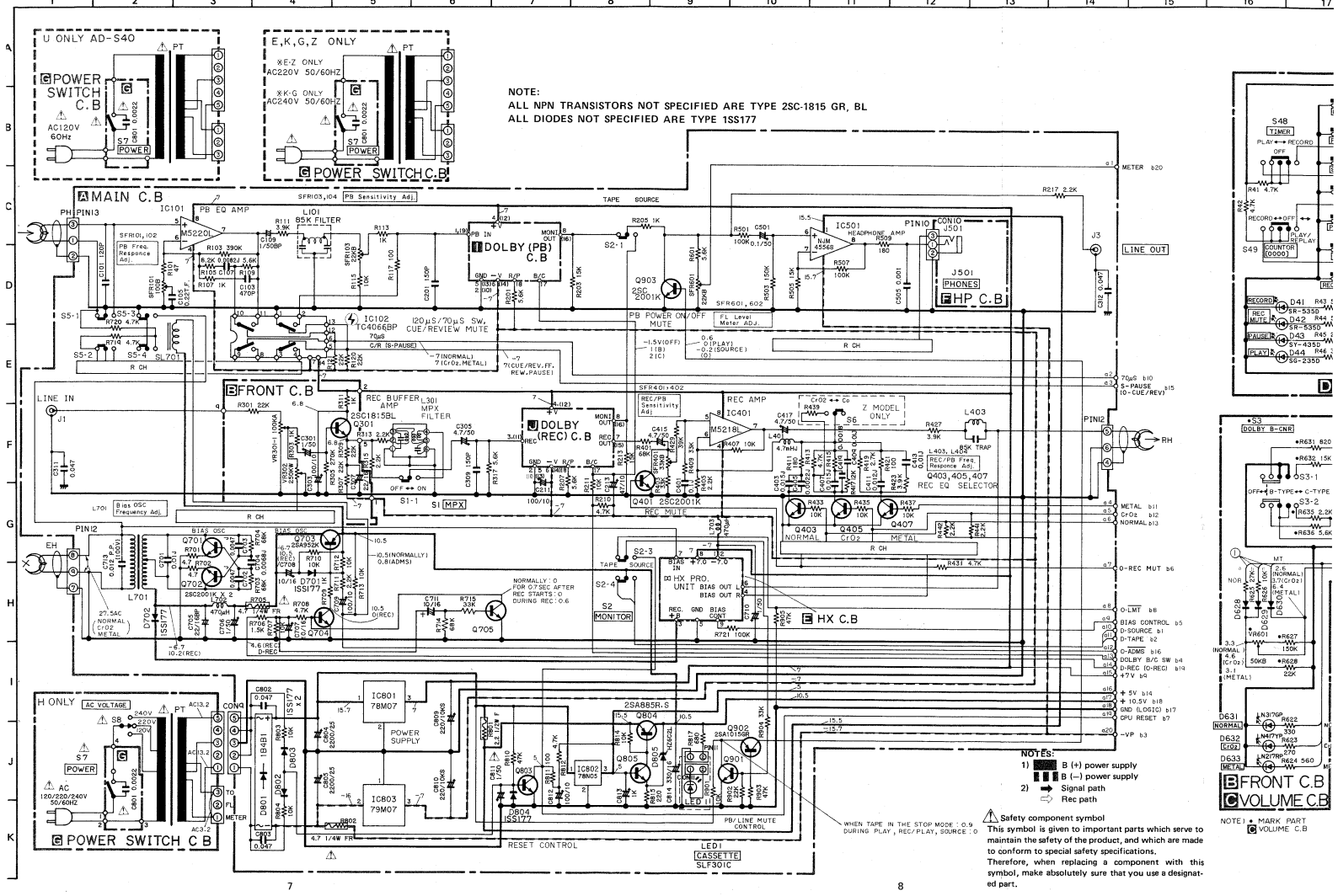
6. NORMAL REC/PB Frequency Responce Adjustment
Settings:
- Recording mode
- Test tape: TTA-119J
- Input signal: 1kHz, 0dB
- Adjustment locations: L403 (L-ch)
  L404 (R-ch)

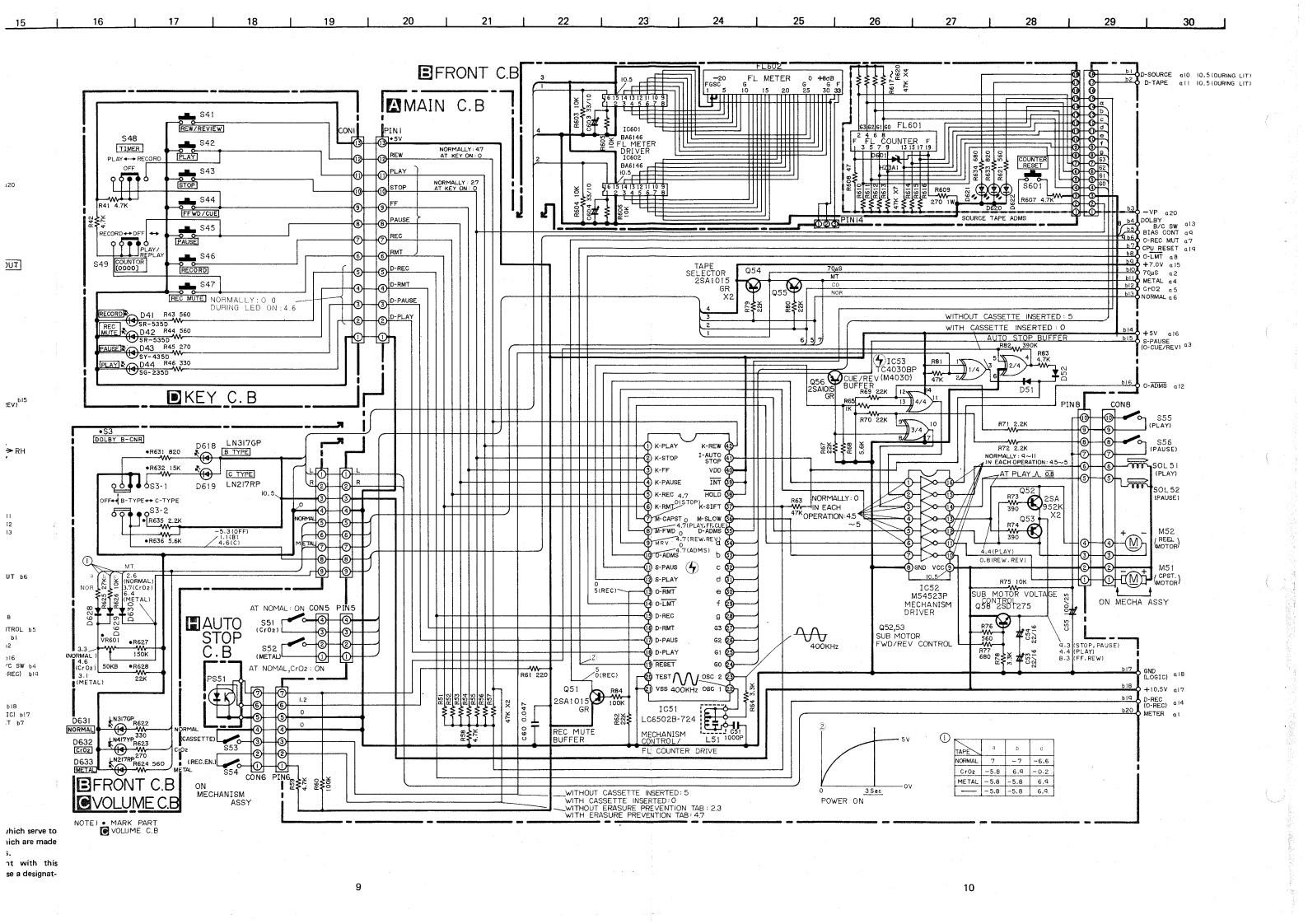
Method: Supply a 1kHz, 38mV signal and adjust the recording level so that the LINE output is made 38mV. Record and playback the 1kHz and 10kHz signals and adjust so that the 10kHz output is 0~0.5dB based on the 1kHz output.

7. NORMAL REC/PB Sensitivity Adjustment
Settings:
- Recording mode
- Test tape: TTA-119J
- Output level: MAX
- Input signal: 1kHz, 0dB
- Adjustment locations: SFR401 (L-ch)
  SFR402 (R-ch)

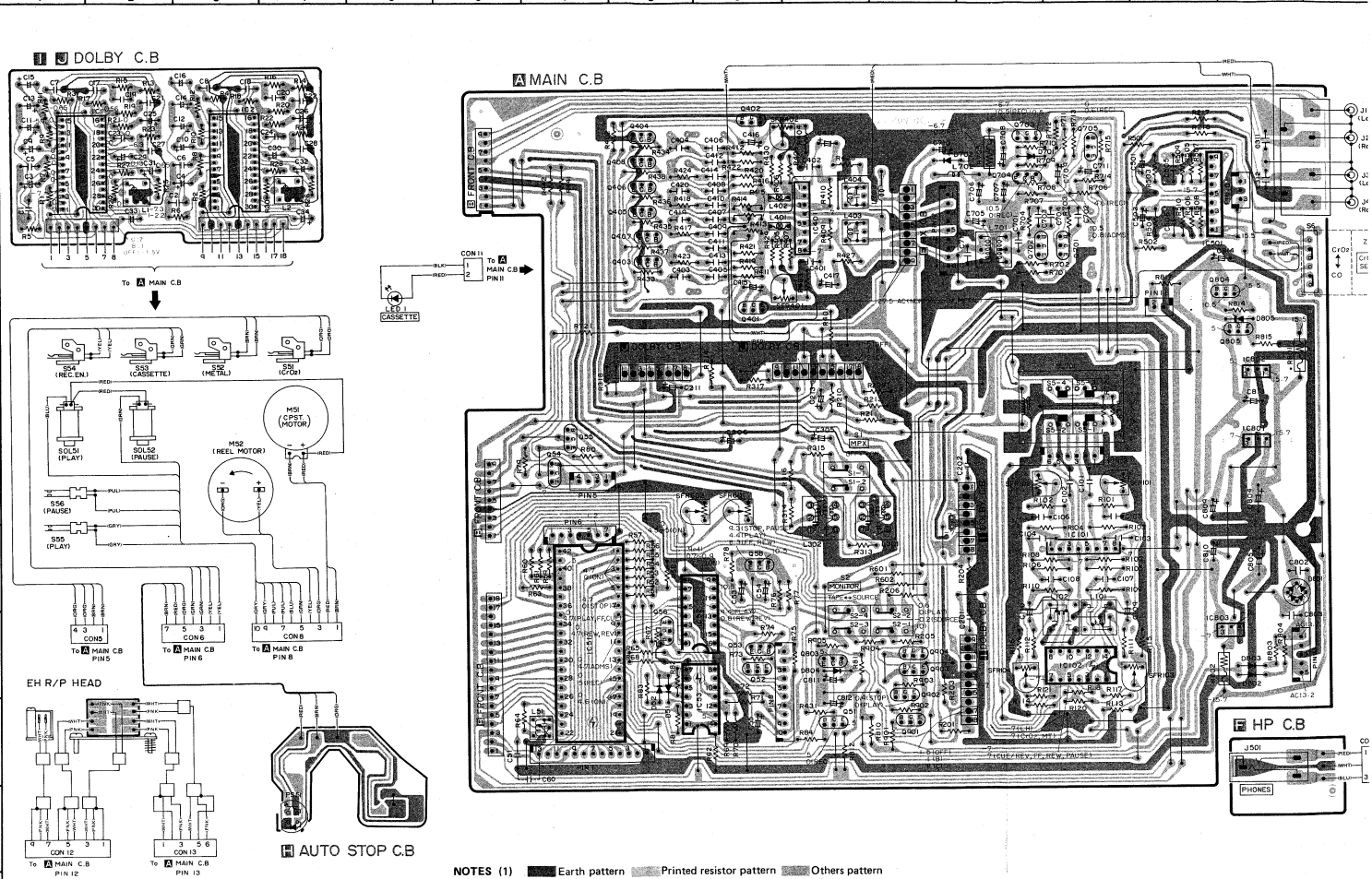
Method: Make the characteristics identical to the 6. NORMAL REC/PB Frequency Adjustment. Adjustment and adjust so that the LINE output is made 38mV.

SCHEMATIC DIAGRAM—1 (AD-F640, S40)





TAPE	a	b	c
NORMAL	7	−7	−6.6
CrO2	−5.8	6.4	−0.2
METAL	−5.8	−5.8	6.4
——	−5.8	−5.8	6.4

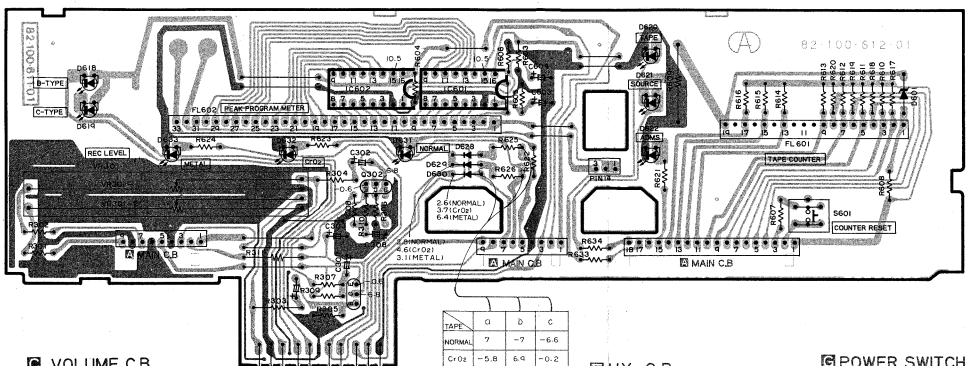


NOTES (1) Earth pattern Printed resistor pattern Others pattern

(2) The voltage is the reference value measured with a tester (20 K ohms/V DC) when there are no signals.
An asterisk (*) indicates that the value was measured with a vacuum-tube voltmeter during recording.

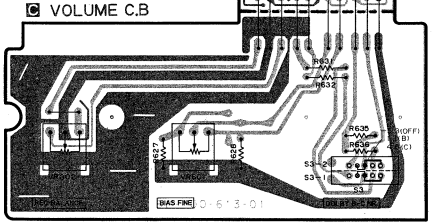
15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

B FRONT C.B

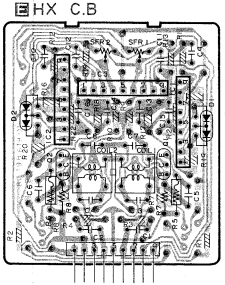


TAPE	A	B	C
NORMAL	7	-7	-6.6
CrO2	-5.8	6.9	-0.2
METAL	-5.8	-5.8	6.9
——	-5.8	-5.8	6.9

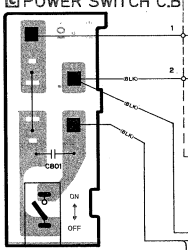
C VOLUME C.B



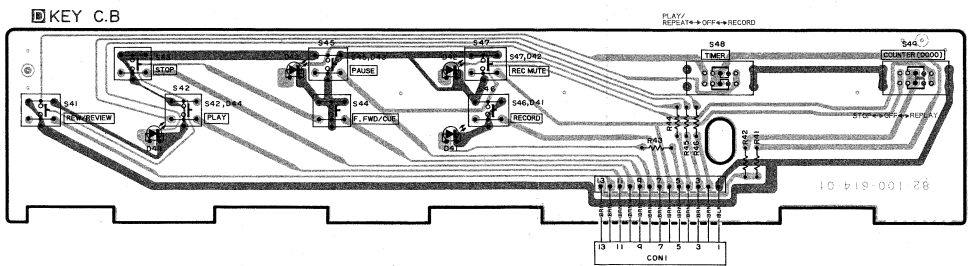
E HX C.B



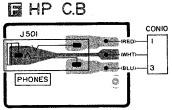
G POWER SWITCH C.B

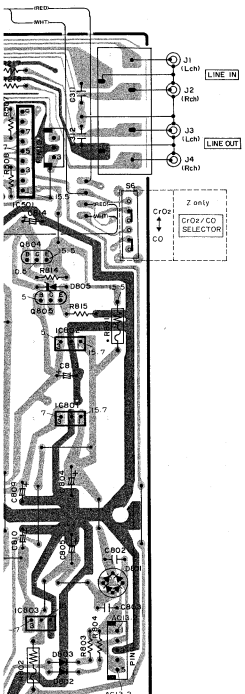


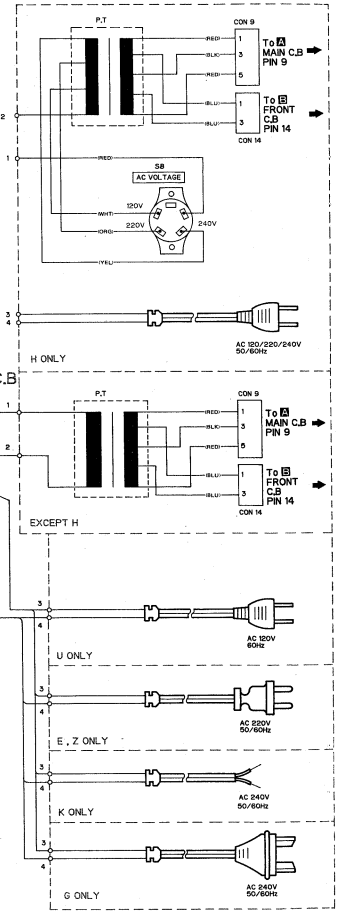
D KEY C.B

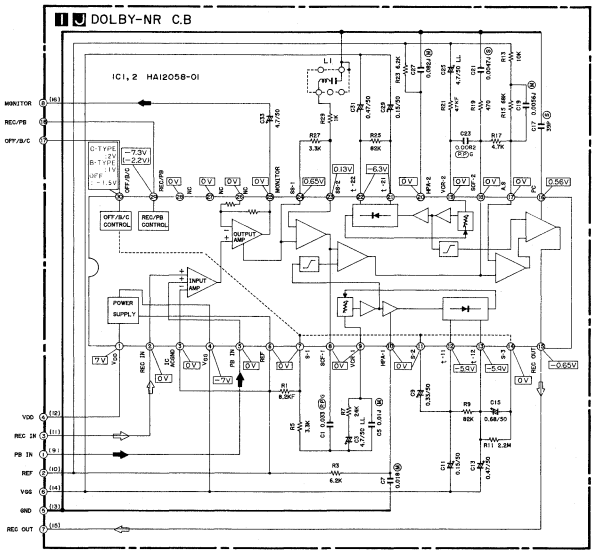


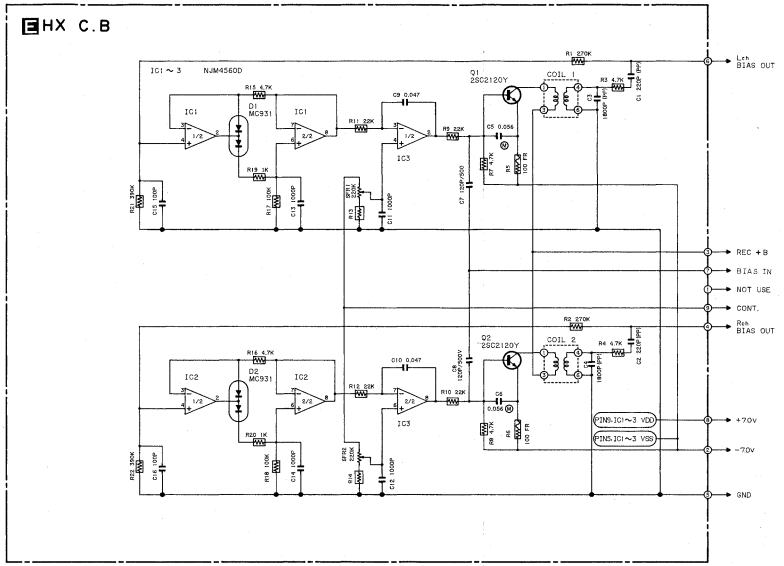
F HP C.B









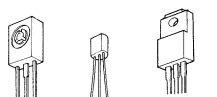


NOTES:

1) ■ B (+) power supply ■■■ B (–) power supply
2) ➡ Signal path
   ⇨ Rec path
3) The voltage is the reference value measured with a tester (20 k-ohms/V DC) when there are no signals. But ( ) is with AM reception or recording. An asterisk (*) indicates that the value was measured with a vacuum-tube voltmeter during recording.
4) Resistors with no designation have a rated power of 1/8W and a tolerance of ±5%.
5) Capacitors with no designation have a dielectric strength of less than 50WV.
6) The only capacitor tolerance indicated are ±5% (J) and ±10% (K).
7) Ceramic capacitor symbols:
   —||— For temperature compensation (SL)
   —||— High dielectric constant system (YY)
   —||— High dielectric constant system (YW, YP, YZ)
   —||— Semiconductor ceramic
   —||— For temperature compensation (SH)
8) Explanation of symbols
   (M) Mylar capacitor
   (A) Aluminum solid capacitor
   (PP) Polypropylene film capacitor
   (BP) Bi-polarized capacitor
   (LL) Low-leakage capacitor
   (T) Tantalum capacitor
   (S) Styrol capacitor
   Fuse resistor
   Nonflammable resistor

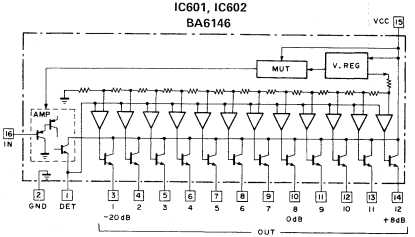
⚠ Safety component symbol
This symbol is given to important parts which serve to maintain the safety of the product, and which are made to conform to special safety specifications. Therefore, when replacing a component with this symbol, make absolutely sure that you use a designated part.

- This schematic diagram is subject to change without notice in the interests of improved performance.

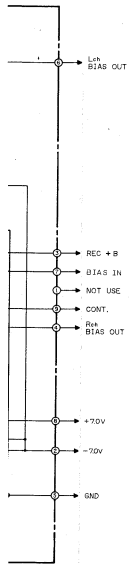


2SA885 **2SA952 2SA1015 2SC1815 2SC2001 2SC2120** **2SD1275**

IC601, IC602
BA6146

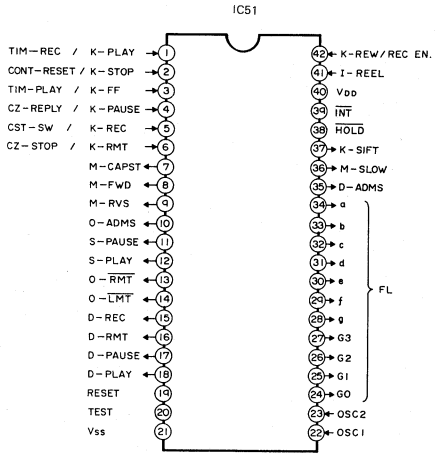


AD-F640 HB, EB, KB, GB, ZB, UB [AD-S40]



1. DESCRIPTION OF IC LC6502B-724

1-1. Terminal name



Signal flow in the direction indicated by the arrow

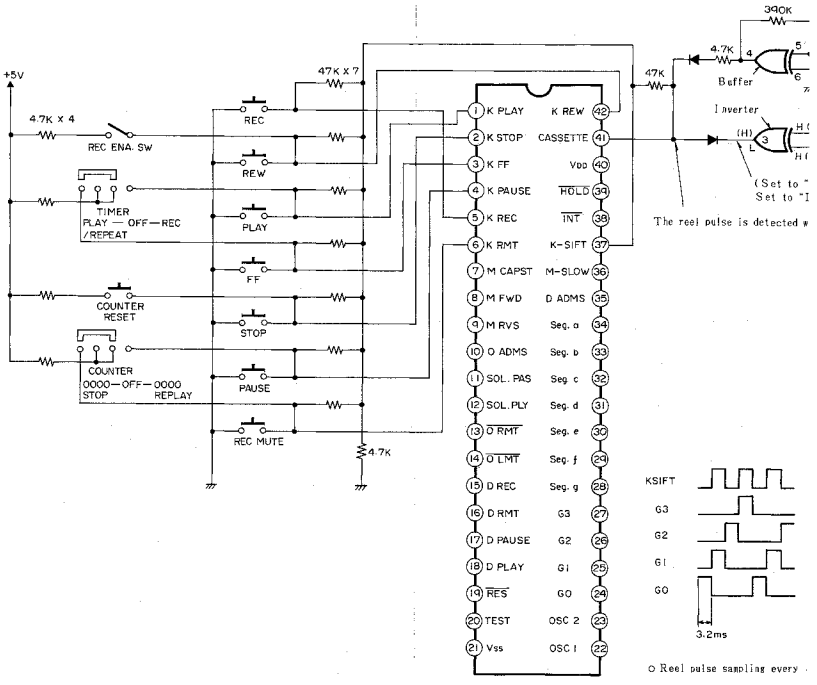
Mechanical control + FL driver (Counter)

* Mechanism 9ME-2 (used in AD-F660, F770, F990)
  3-Head Dual Capstan
* FL counter Directly driven by this CPU

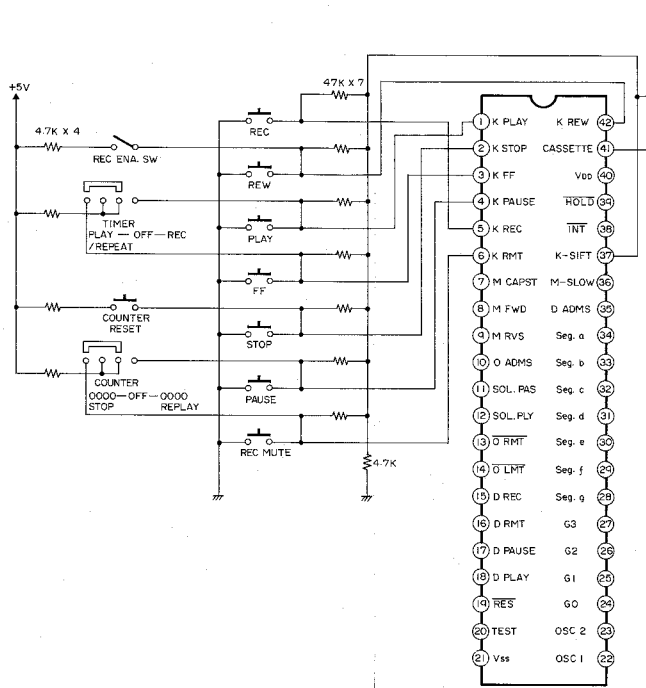
* CONT: Counter "0000"
  TIM: Timer
  PLY: Play
  CZ: Counter Zero("0000")
  CST: Cassette

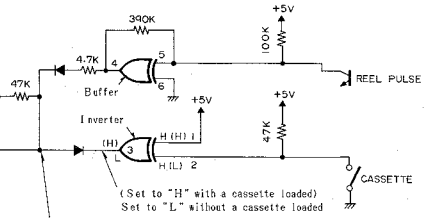
Pin No.	Symbol	Description	
		When K-SIFT is set to "H"	When K-SIFT is set to "L"
42	K-REW/ K-REC EN.	REW key input (Active Low)	REC EN key input (Active High) [REC enabled at "H"]
1	K-PLAY/ K-TIM·REC	PLAY key input (Active Low)	TIMER REC input (Active High)
2	K-STOP/ K-CNT·RES	STOP key input (Active Low)	Counter Reset input (Active High)
3	K-FF/ K-TIM·PLY	FF key input (Active Low)	TIMER PLAY/Repeat input (Active High)
4	K-PAUSE/ K-CZ·PLY	PAUSE key input (Active Low)	Counter "0000" replay input (Active High)
5	K-REC/K-CST	REC key input (Active Low)	Cassette switch input (Active High) [Set to "H" level with cassette]
6	K-RMT/ K-CZ·STP	REC MUTE key input (Active Low)	Counter "0000" stop input (Active High)
41	I-REEL	Take-up reel rotation pulse input. Auto stop, FL counter and slack tape removal control.	
7	M-CAPST	Capstan motor control input. Motor turns at "H" level.	
8	M-FWD	Sub-motor forward rotation output. Set to "H" in PLAY/REC, FF and CUE modes.	
9	M-RVS	Sub-motor reverse rotation output. Set to "H" in REW/REV modes.	
10	O-ADMS	ADMS output. Set to "H" for 2 sec after power is turned on. (When cassette is loaded, set to "H" after slack tape removal.)	
11	S-PAUSE	Pause plunger output. Set to "H" in PAUSE, PLAY PAUSE, R/P PAUSE, FF, REW, CUE and REV modes.	
12	S-PLAY	Play plunger output. Set to "H" in PLAY, PLAY PAUSE, R/P PAUSE, CUE and REV modes.	
13	$\overline{\text{O-RMT}}$	REC MUTE output. Set to "H" when the mechanism is stabilized in the REC/PLAY modes.	
14	$\overline{\text{O-LMT}}$	PLAY MUTE output. Set to "H" when the mechanism is stabilized in PLAY, REC/PLAY, Cue and REV modes.	
15	D-REC	REC LED output. Used in O-REC also. Set to "H" in REC, REC/PLAY, REC/PLAY-PAUSE, REC/PAUSE, REC/PLAY/REC MUTE modes.	
16	D-RMT	REC MUTE LED output. Set to "H" in REC/PLAY/RMT modes. Set to "H" every 1 sec when the RMT key is pressed continuously for 4 sec or more.	
17	D-PAUSE	Pause LED output. Set to "H" in PAUSE, R/P PAUSE, PLAY/PAUSE modes.	
18	D-PLAY	Play LED output. Set to "H" in PLAY, REC/PLAY, PLAY/PAUSE, R/P PAUSE modes.	
35	D-ADMS	ADMS LED output. Set to "H" during slack tape removal and ADMS modes after power is turned on.	

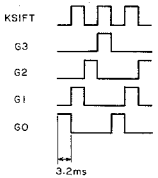
Pin No.	Symbol	Description
24	G_0	FL counter grid 0 Digit scan output 1 place digit
25	G_1	FL counter grid 1 Digit scan output 10 place digit
26	G_2	FL counter grid 2 Digit scan output 100 place digit
27	G_3	FL counter grid 3 Digit scan output 1,000 place digit
28	SEG. g	FL segment output g
29	SEG. f	FL segment output f
30	SEG. e	FL segment output e
31	SEG. d	FL segment output d
32	SEG. c	FL segment output c
33	SEG. b	FL segment output b
34	SEG. a	FL segment output a
37	K-SIFT	Selects key input according to the "H" or "L" state.
36	M-SLOW	Reel motor voltage control output. Set to "H" in PLAY and REC/PB modes.
38	$\overline{HOLD}$	Connected to +5V
39	$\overline{INT}$	
40	V_{DD}	
19	$\overline{RESET}$	Microprocessor reset input. Gradually changes to +5V from 0V within 3 sec after power is turned on.
20	TEST	Connected to GND
21	Vss	
22	OSC1	Microprocessor clock input (400kHz)
23	OSC2	



Description	
id 0	Digit scan output 1 place digit
id 1	Digit scan output 10 place digit
id 2	Digit scan output 100 place digit
id 3	Digit scan output 1.000 place digit
itput g	
itput f	
itput e	
itput d	
itput c	
itput b	
itput a	
put according to the "H" or "L" state.	
tage control output. Set to "H" in PLAY and REC/PB modes.	
+ 5 V	
reset input. Gradually changes to + 5 V from 0 V within 3 sec turned on.	
GND	
clock input (400kHz)	



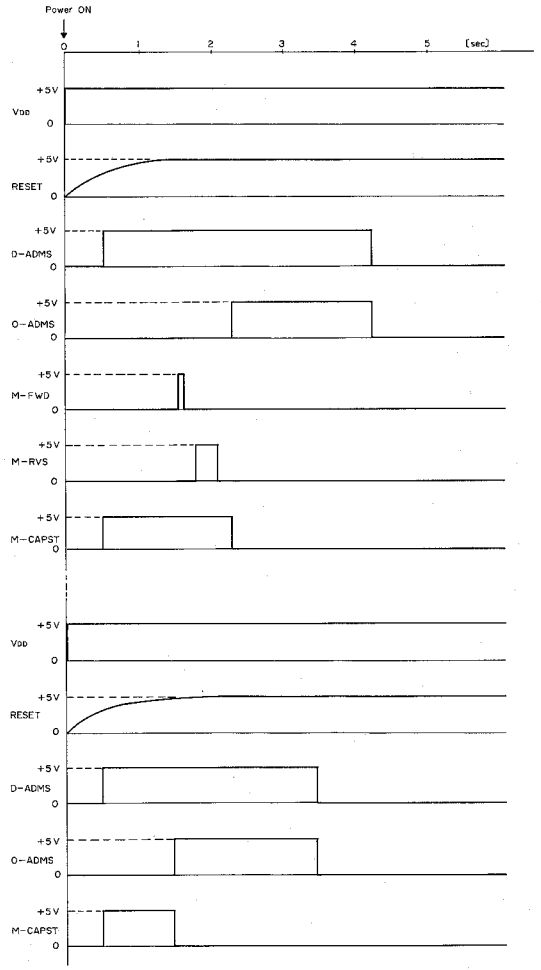




○ Reel pulse sampling every 3.2ms

TIMING CHART

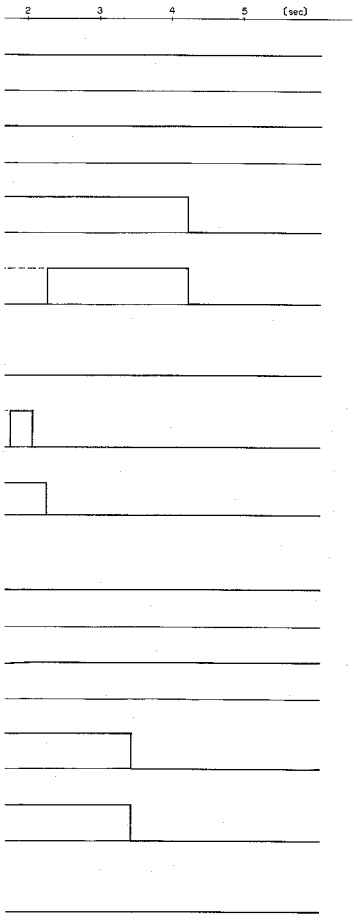
Operation after power is turned on



AD-F640 HB, EB, KB, GB, ZB, UB [AD-S40]

AD-F640HB, EB, KB, GB, ZB, UB (AD-S40)

ower is turned on



DISASSEMBLY INSTRUCTIONS

1. Removing Steel Cabinet

1) Remove the 6 screws.

2. Removing Mechanism

1) Remove the 4 screws and open the cassette lid.
2) Lift up the mechanism in the direction of the arrow. (See Figure-1)

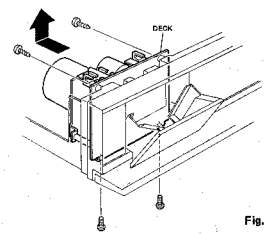


Fig. 1

3. Removing Front Cabinet

1) Removing the 8 screws.
2) Detach the front cabinet in the direction of the arrow. (See Figure-2)

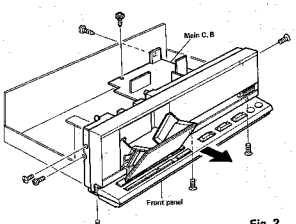


Fig. 2

4. Removing Circuit Boards

1) Remove the 3 screws and detach the bottom cabinet. (See Figure-3)

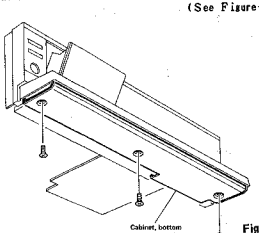


Fig. 3

2) Remove the 2 screws and 3 knobs. (See Figure-4)

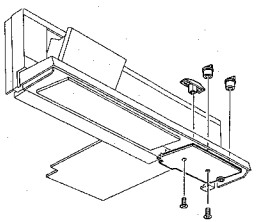


Fig. 4

3) Unfix the Front P.C.B. by loosening 6 plastic holders. (See Figure-5)

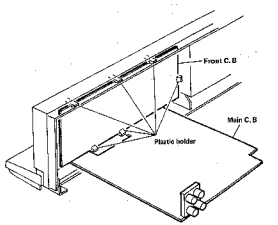


Fig. 5

5. Removing Reel Motor

1) Remove the 2 screws pushing the lever for brake release in the direction of the arrow. (See Figure-6)

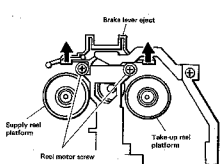
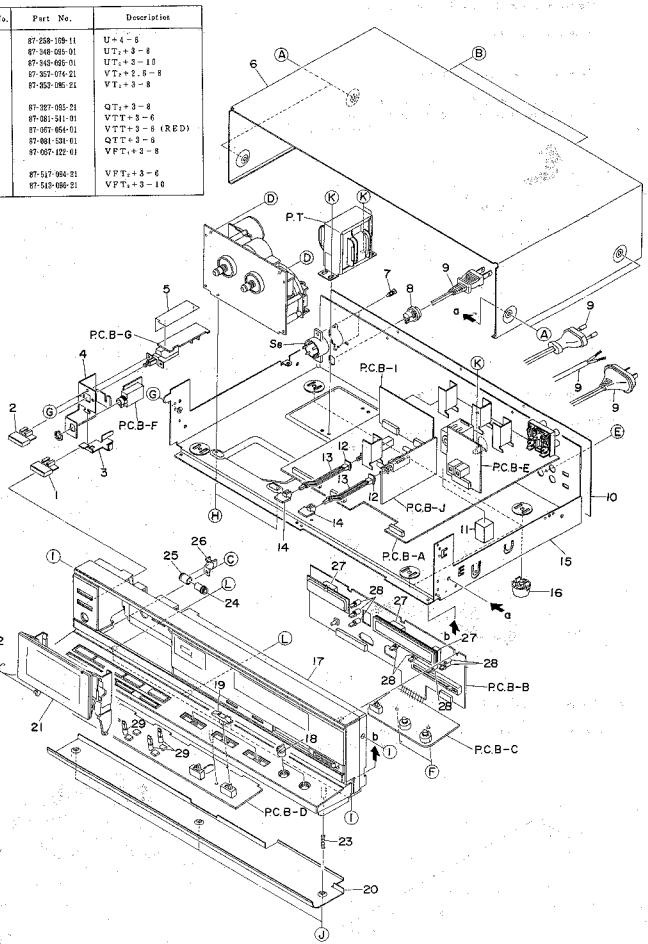


Fig. 6

EXPLODED VIEW-I

Ref. No.	Part No.	Description
A	87-258-109-11	U+4-8
B	87-348-095-01	UT$_2$+3-8
C	87-348-096-01	UT$_2$+2-10
D	87-357-074-21	VT$_2$+2.5-8
E	87-352-085-21	VT$_2$+3-8
F	87-327-095-21	QT$_2$+3-8
G	87-081-541-01	VTT+3-6
H	87-057-654-01	VTT+3-8 (RED)
I	87-081-531-01	QTT+3-6
J	87-057-122-61	VPT$_1$+3-8
K	87-547-984-21	VPT$_2$+3-6
L	87-543-086-21	VPT$_2$+3-10



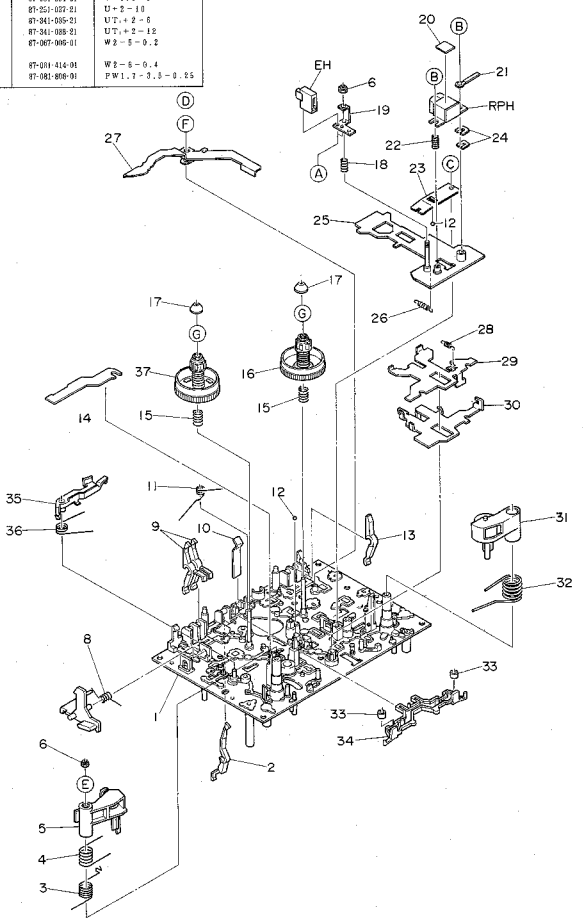
MECHANICAL PARTS LIST

- ※mark in this part list shows exclusive part.
- *-mark means less required items availabilities may be limited.
- No availability part is marked with ——— in Part No. list.

Part No. changed to	Ref. No.	Part No.	Description	Common Model	Q'ty
	1-1	★82-134-022	KNOB, POWER SL	AD-F350	1
	1-2	★82-188-012	KNOB, POWER	AD-F990	1
	1-3	—	LEVER, EJECT		1
	1-4	—	HOLDER, POWER		1
	1-5	—	SHIELD, POWER		1
	1-6	★82-199-012	STEEL CABINET	AD-R550	1
	1-7	★87-085-050	NYLON RIVET (H only)		2
	1-8	★87-085-184	CORD BUSHING (H, S40U only)		1
		★87-085-185	CORD BUSHING (E, K, G, Z only)		1
	1-9	★87-034-958	AC POWER CORD (H only)		1
		★87-034-951	AC POWER CORD (S40U only)		1
		★87-034-877	AC POWER CORD (E, Z only)		1
		★87-034-975	AC POWER CORD (K only)		1
		★87-034-892	AC POWER CORD (G only)		1
	1-10	★82-100-023	JACK PLATE (H only)	※	1
		★82-100-024	JACK PLATE (S40U only)	※	1
		★82-100-025	JACK PLATE (E only)	※	1
		★82-100-026	JACK PLATE (K only)	※	1
		★82-100-029	JACK PLATE (G only)	※	1
		★82-100-027	JACK PLATE (Z only)	※	1
	1-11	—	G CUSHION, CIRCUIT BOARD		1
	1-12	★82-385-383	STOPPER, LOD		2
	1-13	★82-185-214	LOD, DOLBY		2
	1-14	★82-100-016	PUSH-BUTTON TS	※	2
	1-15	—	AMP. CHASSIS (H only)		1
		—	AMP. CHASSIS (EXCEPT H)		1
	1-16	★87-055-055	FOOT		3
	1-17	★82-100-030	FRONT CABINET B Ass'y	※	1
	1-18	82-100-015	KNOB, BIAS	※	2
	1-19	82-100-014	SLIDE KNOB, TIMER	※	3
	1-20	—	BOTTOM CABINET	※	1
	1-21	82-100-019	CASSETTE BOX Ass'y (EXCEPT S40U)	※	1
		82-100-040	CASSETTE BOX-U Ass'y (S40U only)	※	1
	1-22	★82-100-209	T-SPRING, EJECT	※	1
	1-23	★82-100-208	C-SPRING, EARTH B	※	3
	1-24	★82-534-264	GEAR, OIL-DAMP		1
	1-25	★82-175-207	SHAFT BEARING, OIL-DAMP		1
	1-26	★82-683-212	HOLDER, OIL-DAMP		1
	1-27	—	G CUSHION COUNTER		3
	1-28	—	COLLAR, LED B		8
	1-29	—	COLLAR, LED BF		4

EXPLODED VIEW-2

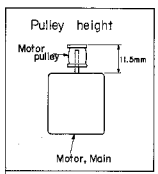
Ref. No.	Part No.	Description
A	87-981-954-01	V+1.6-3
B	81-251-037-21	U+2-10
C	87-941-085-21	UT.+2-6
D	87-941-088-21	UT.+2-12
E	87-067-006-01	W2-5-0.2
F	87-081-414-01	W2-6-0.4
G	87-081-808-01	PW1.7-3.3-0.25

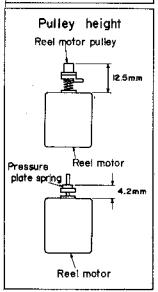


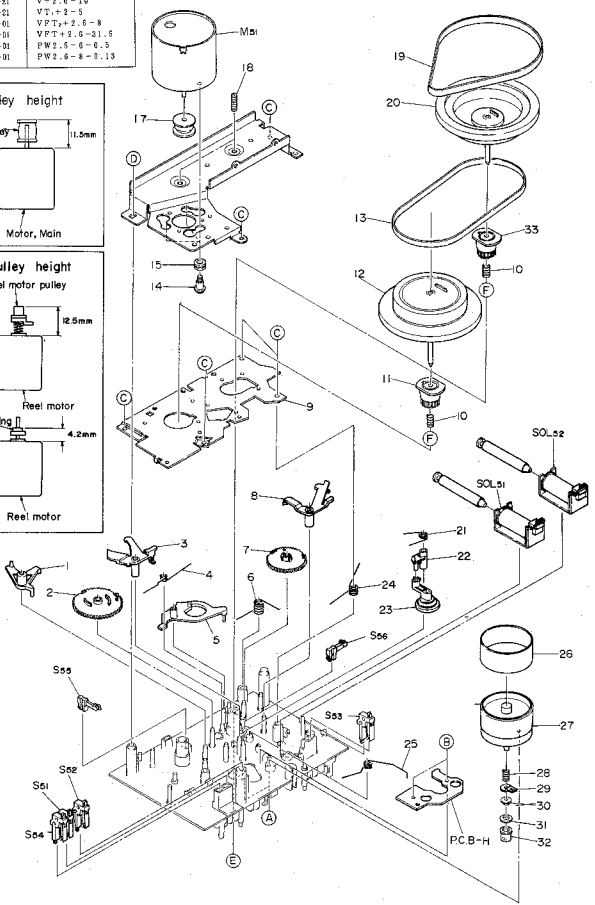
Part No. changed to	Ref. No.	Part No.	Description	Common Model	Q'ty
	2-1	★81-507-225	OUTSERT CHASSIS Ass'y		1
	2-2	★81-505-242	LEVER, METAL		1
	2-3	★81-507-228	C-SPRING, PINCH LEVER S		1
	2-4	★81-507-217	T-SPRING, PINCH LEVER S		1
	2-5	81-507-207	PINCH LEVER S Ass'y		1
	2-6	★87-981-963	NYLON NUT M2-3.5		2
	2-7	★81-505-239	EJECT LEVER		1
	2-8	★81-505-273	T-SPRING, LID LOCK		1
	2-9	★81-505-241	REC BLOCKING LEVER		2
	2-10	★81-505-260	P-SPRING, PRESSURE CASSETTE		1
	2-11	★81-505-268	T-SPRING, SLIDE BRAKE		1
	2-12	★87-073-005	STEEL BALL 2ø		2
	2-13	★81-505-240	LEVER, CASSETTE SENSOR		1
	2-14	★81-505-238	BLOCKING PLATE, EJECT		1
	2-15	★81-507-219	C-SPRING, REEL PLATFORM		2
	2-16	81-507-256	TAKE-UP REEL PLATFORM		1
	2-17	★82-303-398	CAP, TAKE-UP REEL PLATFORM		2
	2-18	★81-507-251	C-SPRING, EH B		1
	2-19	★81-507-250	HOLDER, EH C		1
	2-20	—	LABEL, HEAD		1
	2-21	—	WIRE BINDER		1
	2-22	★82-307-212	C-SPRING, EH		1
	2-23	★81-507-224	P-SPRING, ACTUATING CHASSIS		1
	2-24	★81-507-227	SPACER		2
	2-25	★81-507-252	ACTUATING CHASSIS Ass'y B		1
	2-26	★81-505-265	E-SPRING, ACTUATING CHASSIS		1
	2-27	—	LEVER, BRAKE EJECT		1
	2-28	★81-507-266	E-SPRING, PAUSE PLATE		1
	2-29	★81-505-207	PLATE, PAUSE		1
	2-30	★81-507-220	PLATE, PINCH LEVER		1
	2-31	81-505-210	PINCH LEVER F Ass'y		1
	2-32	★81-505-267	T-SPRING, PINCH F		1
	2-33	★81-507-229	G BRAKE		2
	2-34	★81-505-236	LEVER, SLIDE BLAKE		1
	2-35	★81-507-222	LEVER, BACK TENSION		1
	2-36	★81-507-223	T-SPRING, B. T		1
	2-37	81-505-275	SUPPLY REEL PLATFORM		1

EXPLODED VIEW-3

Ref. No.	Part No.	Description
A	87-261-075-21	V+2.6−10
B	87-851-534-21	VT+2−5
C	87-512-074-01	VPT+2.6−8
D	81-565-541-01	VPT+2.6−31.5
E	88-416-558-01	PW2.6−6−6.5
F	87-067-052-01	PW2.6−8−0.13







Part No. changed to	Ref. No.	Part No.	Description	Common Model	Q'ty	
	3-1	★81-505-230	LEVER, PLAY		1	
	3-2	81-505-284	GEAR, PLAY CAM		1	
	3-3	★81-505-231	TRIGGER LEVER, PLAY		1	
	3-4	★81-505-272	T-SPRING, CAM		1	
	3-5	★81-505-308	LEVER B, PAUSE		1	
	3-6	★81-505-283	T-SPRING, PAUSE LEVER		1	
	3-7	81-505-235	GEAR, PAUSE CAM		1	
	3-8	★81-505-238	TRIGGER LEVER PAUSE		1	
	3-9	—	CHASSIS B, MECHANISM		1	
	3-10	★81-505-261	C-SPRING, FLYWHEEL F		2	
	3-11	★81-505-225	GEAR, FLYWHEEL		1	
	3-12	81-507-205	FLYWHEEL S Ass'y FD		1	
	3-13	81-507-247	RUBBER BELT B		1	
	3-14	★87-081-483	MOTOR SCREW, M2.6		3	
	3-15	—	RUBBER CUSHION		3	
	3-16	—	HOLDER, MOTOR		1	
	3-17	★81-505-245	MOTOR PULLEY 2-10-6.8		1	
	3-18	★82-565-373	SCREW, THRUST		2	
	3-19	81-507-216	RUBBER BELT A		1	
	3-20	81-507-242	FLYWHEEL T Ass'y FD		1	
	3-21	★81-505-361	T-SPRING, FR IDLER B		1	
	3-22	★81-505-359	LEVER C, FR IDLER		1	
	3-23	81-505-356	FR IDLER Ass'y B		1	
	3-24	★81-505-271	T-SPRING, TRIGGER LEVER		1	
	3-25	★81-505-269	T-SPRING, PINCH PLATE		1	
	26～32	09-047-198	REEL MOTOR Ass'y		1	
	3-26	—	SHIELD PLATE		1	
	3-27	—	MOTOR, REEL		1	
	3-28	—	C-SPRING, FR IDLER C		1	
	3-29	—	LEVER C, FR IDLER		1	
	3-30	—	PRESSURE PLATE SPRING		1	
	3-31	—	FELT 4.5-7.2-1.0		1	
	3-32	—	PULLEY, REEL MOTOR		1	
	3-33	★81-505-354	GEAR, FLYWHEEL		1	

■ACCESSORIES/PACKAGE LIST

Part No. chanzed to	Ref. No.	Part No.	Description	Common Model	Q'ty
	1	★82-100-904	INSTRUCTION BOOKLET	※	1
	2	★87-032-845	SIEMENS PLUG (HB only)		1
	3	★87-034-978	CONNECTION CORD CW-254BSK		2

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